



Antarctic Meteorite

NEWSLETTER

SPECIAL EDITION ANNOUNCING . . .

**The Availability of a New
Lunar Meteorite!**

**Volume 12
Number 2**

July 1989

A periodical issued
by the Meteorite
Working Group to
inform scientists of
the basic
characteristics
of specimens
recovered in the
Antarctic.

**Edited by Marilyn
M. Lindstrom**
Code SN2, NASA
Johnson Space
Center,
Houston, Texas
77058

**SAMPLE REQUEST DEADLINE:
October 10, 1989 !!!!**

MWG MEETS OCTOBER 19 - 21

NEWS AND INFORMATION

This special edition of the newsletter presents the classification of an exciting new Lunar meteorite. MAC88104 and MAC88105 were collected as paired specimens in the eastern quarter of the basin of the MacAlpine Hills blue ice field. They were found in an area that has a large concentration of terrestrial rocks of various types and a few meteorites. These fragments were collected by the 1988 ANSMET field team which consisted of William Cassidy, David Blewett, Monica Grady, Ralph Harvey, Randy Korotev, Scott Sandford, John Schutt, and Roberta Score.

This newsletter announces the preliminary data for MAC88104 and MAC88105. The next newsletter (Sept. 1989) will provide ²⁶aluminum, oxygen isotope and thermoluminescence data which are being measured as part of the regular initial characterization of this meteorite.

The Meteorite Working Group (MWG) will hold their regularly scheduled meeting at the Smithsonian Institution on October 19-21 to review requests for this and other meteorites. For information on sample request guidelines and explanation for the weathering and fracturing categories please see Antarctic Meteorite Newsletter 12 (1), or an earlier newsletter.

<u>SAMPLE NO.</u>	<u>MAC88104</u>	<u>MAC88105</u>
Weight (g):	61.2	662.5
Dimensions (cm):	4 x 4.5 x 2.5	11 x 7.5 x 6.5
Location:	MacAlpine Hills	MacAlpine Hills
Field No.:	5757	5759
Weathering:	A/Be	A/Be
Fracturing:	A/B	A/B
Meteorite Type:	Anorthositic Breccia	

Macroscopic Description: Roberta Score

MAC88104 and MAC88105 are paired fragments of a polymict breccia. Both specimens have thin gray-green fusion crust which covers approximately 30% of the exterior surface. The other exterior surfaces are dark gray and weathered, with numerous clasts and vugs where clasts have been plucked out by weathering. A minute amount of evaporite minerals is evident in the minor cracks in the fusion crust. The interior is blue gray and mostly fine-grained, but glassy in some areas. Veins of dark vesicular glass surround some clasts, but do not transect any clasts. The meteorite contains abundant angular feldspathic clasts and fine-grained gray, black and beige clasts. The largest clast exposed (1.5 x 1 cm) is fine-grained and anorthositic, with scattered mafic minerals. Other clasts are medium-grained and more mafic.

Thin Section (MAC88105.6) Description: Brain Mason

The section shows a microbreccia of small (up to 3.0 mm) mineral grains and clasts (up to 3 mm across) in a translucent to semi-opaque brown glassy matrix. The mineral grains are almost all plagioclase, except for a few olivines; one minute grain of metal or metal-sulfide was seen. Some of the clasts consist almost entirely of dark brown semi-opaque glass; others show small plagioclase laths with interstitial glass; one appears to be fine-grained troctolite. Microprobe analyses show that the plagioclase is almost pure anorthite (Na_2O 0.3 - 0.5%, K_2O less than 0.1%). Olivine composition is Fa_{10-18} ; its FeO/MnO ratio is very high, 60 - 80, characteristic of lunar material. The average composition of the glassy matrix is (weight percent): SiO_2 45, Al_2O_3 28, FeO 6.3, MgO 4.7, CaO 16, Na_2O 0.36, TiO_2 0.32, MnO 0.11, K_2O <0.1, i.e. anorthositic. The meteorite is an anorthositic microbreccia, almost certainly of lunar origin.